IT Initiative Supplement

February 25, 2010

I. Project Description

Project Title: Tank Database Upgrade
Brief Description of the Project Title: This proposal would migrate the current database to a new, state-supported platform.
Statewide Priority:
Agency Priority:
Estimated Completion Date: June 30, 2013
IT Project Biennium: 2012-2013
Request Number:
Version:

Agency Number: 5301
Agency Name: Department of Environmental Quality
Program Number: 40
Program Name: Remediation Division

A. Type of Project (check all that apply)

Enhancement - X
Replacement - X
New
O&M - X

B. Type of System (check all that apply)

Mid-Tier - X
Mainframe
GIS - X
Web
Network
Desktop

II. Narrative

C. Executive Summary

Project Purpose and Objectives: The purpose of this proposal is to convert the existing database system from its Microsoft Access (ACCESS) platform to a more robust state-supported platform more compatible with both short and long-term program needs to ensure long-term stability and continuity of the tank databases for purposes of efficiently tracking pertinent information to implement department regulatory requirements and to provide information

necessary to ensure cross-program requirements within the department are effectively managed accountably.

    Technical Implementation Approach: This design and development project will leverage the functional capabilities of a database management system that is scaled to manage the volume of data and the complex business processes inherent to our business operations, and the high level of customer satisfaction with the ACCESS user screens currently in place coupled with sound business practice improvement and with the institutional knowledge and technical skills of the current sole provider contracted services which keep the system operational today. Planning the project to capitalize on these "in place" assets will greatly reduce implementation costs and risk of failure of the effort.

    Project Schedule and Milestones:
1. **Estimated Start Date: July 2012**
2. **Estimated End Date: June 2013, with ongoing maintenance**
3. **Major Project Milestones:**

Milestone	Schedule
Select contractor	1st Quarter
Project planning	2nd Quarter
Requirements gathering and analysis	3rd & 4th Quarter
System design	4th & 5th Quarter
Development and testing	5th and 6th Quarter
Prepare data for migration	6th Quarter
Migration and testing	6th Quarter
Final user acceptance testing and training	7th Quarter
Full implementation	June 30, 2013

D. Business and IT Problems Addressed

The existing database system is comprised of several silo Microsoft ACCESS systems that have been engineered to provide data to a multi-user environment across four business locations. This system has reached the functional limitations of the ACCESS product and cannot continue to efficiently support the business needs of this environment.

To keep pace with the demands of increased users and data needs, the department has contracted with a sole provider that has managed to extend the life of the system by leveraging the technical advances of the Microsoft ACCESS platform with redundant processes and sophisticated work-arounds. The system has become slow, occasionally crashes unexpectedly making it burdensome and frustrating to use as ACCESS is not designed to perform operations over that volume of data efficiently. The current system is approaching the 2 gigabyte limit which is being mitigated monthly using compression. Compression will likely not be an adequate mitigation within 2 years at the current rate of growth. Furthermore, the additional data that must be stored within the system in order to respond to information requests from management, legislators, interested parties and the public in upcoming years will rapidly exceed the storage limitations of the platform, driving the need to provide more efficient operations and mitigate the risk of utilizing a sole provider for contracted services.

As DEQ works to provide critical data to appropriate business partners within DEQ across all functional barriers, ACCESS limits design options as it does not integrate with GIS-multi-user, geo-database systems or Oracle. This solution will address the technical limitations of the

platform, provide more efficient operations and mitigate the risk of utilizing a sole provider for contracted services.

Lastly, the 2003 version of ACCESS will likely be obsolete in the coming year. This would drive the need for an upgrade to a newer version during the 2012-2013. These costs would be up to 125,000 for the database. These costs would be offset by converting to SQL instead to achieve both goals.

E. Alternative(s)

Alternatives Considered:
1. **No Action**
2. **Purchase of COTS**
3. **Internal development of a new system (SQL)**
4. **Outsourcing SQL Server**
5. **Oracle Conversion**

Rationale for Selection of Particular Alternative:

SQL Server with federal funding was selected because SQL better meets the business needs of the program and there is a greater probability of finding funds to conduct the conversion. There are numerous states with databases developed for the UST-LUST tank programs which already are using a SQL platform to meet similar program management needs. Therefore it will be easier and cost effective to utilize one of these programs for a base, at a lesser cost, from which to tailor the conversion to meet department needs. This alternative will also minimize the potential significant impacts that would occur if we do not plan for change.

F. Narrative Detail

No Change. This approach requires constant modification and enhancement of the existing ACCESS platform. Given the ACCESS limitations and its application in a multi-user distributed environment, the current DEQ ACCESS system will eventually, for practical purposes, be render unusable.

No change would continue to slow operations, hamper the ability of the department to meet business goals and may ultimately result in system failure. Reduced efficiency of operations in the current system imposes an inherent financial impact in a reduction in staff efficiency. A system failure would further hamper the department's ability to conduct operations efficiently or in the worst case stop operations completely while a solution is sought. Planning and building a system from scratch in an emergency would impose aggressive deadlines in the need to resume operations as quickly as possible pushing the cost of developing the new system much higher than a well-planned system development project and could well exceed the cost of this request.

Maintenance costs would remain high; current ongoing maintenance and enhancements costs the department over $100,000 per year in contracted services, which are necessary to keep this system running. The inherent cost of reduced efficiency amounts to over $100,000 per year because it includes the cost of potential failure (i.e. costs to redesign and implement a new system).

Purchase of COTS. There is not a Commercial Off-The-Shelf (COTS) product available that would serve the very specific needs of the division.

Internal Development of a new System in SQL. DEQ does not have sufficient staff resources within the Office of Information Technology and the Remediation divisions to support a development effort of this size.

Outsourcing Development of a new System. This is the most efficient option, leveraging existing staff, developments of similar platforms in other states, and the department's sole source provider. Changing to an alternative platform prior to failure would allow for a planned, well executed project, which could result in a state-supported database management system which would ensure the stability of the data and business operations. Given the technical limitations of the ACCESS platform, system failure is almost assured. The money spent in supporting this system, if spent on the design and implementation of a new system, would begin to show an immediate return on investment rather than the negative depletion of financial resources.

Migration from the existing platform and the resolution of current shortcomings in system performance would greatly improve the department's ability to meet business goals and more efficiently serve its customers. The construction of a system housed in a state-supported database management system would reduce maintenance costs over the expected shelf life of the product by eliminating the need for contracted services to meet operational necessities.

Oracle would be the most expensive, complex option, minimizing our ability to leverage resources and would not integrate successfully with ACCESS.

III. Costs

G. Estimated Cost of Project:	FY2012	FY2013
1. Personnel Services – IT Staff:	1 FTE	1 FTE
2. Personnel Services – Non IT Staff:	$ 65,000	$ 65,000
3. Contracted Services:	$ 310,000	$ 310,000
4. ITSD Services:	$ 5,068	$ 5,068
5. Hardware:		
6. Software:		
7. Telecommunications:		
8. Maintenance:		
9. Project Management:	$ 78,430	$ 78,430
10. IV&V	$ 35,650	$ 35,650
11. Contingency:	$ 46,500	$ 46,500

12. Training: Included   Included

13. Other:

Total Estimated Costs: $ $ 540,648 $ 540,648

Total Funding: To be determined

IV. Funding

H. Funding

   1. Fund: If available: Leaking Underground Storage Tank grants (03221): $481,500; with 10 % match from the Hazardous Waste Account (02070): 53,500; or other federal funding that becomes available.

2. Amount:	FY2012	FY2013
02070	$ 54,064.80	$ 54,064.80
03 221	$486,583.20	$486,583.20
Total	$540,648.00	$540,648.00

   3. Total Costs: $1,081,296

        Cash/Bonded: Grant funds with match

        Bill Number: TBD

V. Cost upon Completion

   1. **Operating Costs upon Completion**

        FTE: Existing staff

        Personal Services Costs: Existing budget

        Operating Costs: Existing budget

        Maintenance Expenses: $150,000

        Total Estimated Costs: $150,000

2. Funding Recap

> **Fund Type:** 02070 and 03221

> **Amount:** $108,129.60 and $973,166.40, respectively

> **Total Funding:** $1,081,296

V. Risk Assessment

A. Current IT Infrastructure Risks

1. **Current application 10+ years old?**   __YES____
    Date of last major upgrade?   _Mid '90s_

2. **Current application is based on old technology?**   __NO _____
    If yes, what is the current hardware platform, operating system, and programming languages used to support the application?

3. **Is the agency not capable of maintaining the current application with internal technical staff?**   _ YES____
    If yes, who supports the application today?   Developer of Original System

4. **Other IT infrastructure risks?**   __YES___
    If yes, provide further detail.   The application is no longer appropriate for its intended use and the needs of the program have outgrown the capacity of the application.

The current ACCESS database is housing the data for tanks permitting, cleanup, and reimbursement programs has reached the design limitations of ACCESS. The business requirements for performance, functionality and management of the department's record volume cannot be met with the limited functionality of ACCESS. The ACCESS database management tool is also not designed to provide functional capability within a multi-user, multi-locational environment that are needed between the four department office locations that utilize the data (Helena onsite, Helena Offsite, Billings, and Kalispell). Having nearly reached the capabilities of ACCESS, the current system has become extremely slow, burdensome, and frustrating to use. Consequently this increases maintenance cost, creates the need for customized reports and creates long delay times often making the system usage borderline dysfunctional for users, and signals the probability of system failure.

The department has had significant problems storing and retrieving data, which leads to proliferation of individual, disconnected, and disparate tracking sheets which concurrently inhibit the effective use of data for efficient program management. Resolution of this issue requires many work-arounds and increases the number of system users. Furthermore, expansion of the system data volume is critical to ongoing

operations as additional data is identified that needs to be stored in order to respond to information requests from management, legislators, interested parties and the public.

Successful enhancement of the current system to accommodate the additional functionality and storage capacity required to meet our business and informational needs is an unrealistic expectation given the already poor performance of the system and may very well result in hastening complete system failure.

The department proposes to take a proactive stance to address risks inherent to the current system before system failure occurs. The department would utilize a small team of contractors to analyze and select an appropriate state-supported/ hosted database management system that will meet the robust technical and functional requirements inherent to a multi-user environment, across multiple locations, convert data from the ACCESS database that is currently utilized that meet the business, growth and functionality needs of the department's tank program. The contractors would also develop a software application that would preserve or enhance the ease of use provided in the current user interface and align with the department's goals of providing an enterprise solution within the DEQ. This is anticipated to be a 2-year project coordinated with the department's tank programs in the Hazardous Waste Site Cleanup Bureau, the Waste and Underground Tank Management Bureau, the Petroleum Tank Release Compensation Board and assistance from the Office of Information Technology division.

B. Current Business Risks

1. What are the risks to the state if the project is not adopted?

If this project is not undertaken, there would be program issues associated with up to four of the department's and department-related regulatory programs. If one part of the system fails it is likely to trigger problems with interrelated programs. There are data from approximately 4400 sites managed in this program, 1700 or so of which are in active management status.

Whatever failure occurs would have to be compensated for by managing information individually by hand. This means that numerous individual systems would be developed which would be difficult to recapture information from when the functionality is restored. This in turn would slow work efforts and cleanup actions, as well as impair meeting reporting requirements to federal agencies.

Slower cleanup actions would drive increased cleanup costs where contaminants are mobile. Already limited site funds (PTRC fees (fund 02058)) would be impacted by any increase in costs at sites eligible for funding. At other sites, owners and operators would bear the burden.

Lastly effective program management would be impaired as it becomes difficult for program mangers to retrieve program level information.

2. Does the current application meet current business requirements?   __NO___
If "no", what specific business functions does the application lack?

Its functionality is compromised as we try to make it available to multiple users in multiple locations. In addition it is at capacity. ACCESS is no longer an appropriate platform for the program's applications.

C. Project Risk Assessment

1. Describe any major obstacles to successful implementation and discuss how those obstacles will be mitigated.

Table H   Risk Assessment

Description	Severity (H/M/L)	Probability of Occurrence (%)	Estimated Cost	Mitigation Strategy
Existing Risk: Current system capacity has been reached.	**H**	**H**		**Replace**
Current key contractor is retiring within a few years	**H**	**H**		**Continue to build expertise in-house**
Existing Risk: Occasional System shutdowns are creating bottlenecks to staff productivity	**H**	**H**		**Patch or Replace**
Existing lack of internal support for problems solving	**M**	**M**		**Continue to build expertise in-house**
Business Risk: Lack of a functional system	**H**	**H**		**Replace before it breaks irreparably**
Project Risk: Loss of existing O&M Contractor	**H**	**M**		**If project is timely the Contractor won't retire before we are done.**
Project takes longer than anticipated	**M**	**M**		**Project life spending authority**
Project Funding is unavailable	**H**	**H**		**Continue to prepare existing database for future migration; continue to build expertise in-house**